

DEC 22 2005

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U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE

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PETITION FEE

Under 37 CFR 1.17(f), (g) & (h)

TRANSMITTAL

(Fees are subject to annual revision)

Send completed form to: Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450

Application Number	10/802,853
Filing Date	March 18, 2004
First Named Inventor	S. Kodama
Art Unit	2171
Examiner Name	TBD
Attorney Docket Number	274.43202X00

Enclosed is a petition filed under 37 CFR 1.102(d) that requires a processing fee (37 CFR 1.17(f), (g), or (h)). Payment of \$ 130.00 is enclosed.

This form should be included with the above-mentioned petition and faxed or mailed to the Office using the appropriate Mail Stop (e.g., Mail Stop Petition), if applicable. For transmittal of processing fees under 37 CFR 1.17(i), see form PTO/SB/17i.

Payment of Fees (small entity amounts are NOT available for the petition (fees))

☒ The Commissioner is hereby authorized to charge the following fees to Deposit Account No. 50-1417:
☐ petition fee under 37 CFR 1.17(f), (g) or (h) ☒ any deficiency of fees and credit of any overpayments
 Enclose a duplicative copy of this form for fee processing.

☐ Check in the amount of \$ _____ is enclosed.

☒ Payment by credit card (From PTO-2038 or equivalent enclosed). Do not provide credit card information on this form.

Petition Fees under 37 CFR 1.17(f): Fee \$400 Fee Code 1462

For petitions filed under:

- § 1.53(e) - to accord a filing date.
- § 1.57(a) - to according a filing date.
- § 1.182 - for decision on a question not specifically provided for.
- § 1.183 - to suspend the rules.
- § 1.378(e) for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in an expired patent.
- § 1.741(b) - to accord a filing date to an application under §1.740 for extension of a patent term.

Petition Fees under 37 CFR 1.17(g): Fee \$200 Fee code 1463

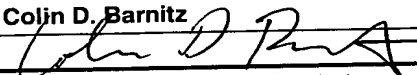
For petitions filed under:

- §1.12 - for access to an assignment record.
- §1.14 - for access to an application.
- §1.47 - for filing by other than all the inventors or a person not the inventor.
- §1.59 - for expungement of information.
- §1.103(a) - to suspend action in an application.
- §1.136(b) - for review of a request for extension of time when the provisions of section 1.136(a) are not available.
- §1.295 - for review of refusal to publish a statutory invention registration.
- §1.296 - to withdraw a request for publication of a statutory invention registration filed on or after the date the notice of intent to publish issued.
- §1.377 - for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of a patent.
- §1.550(c) - for patent owner requests for extension of time in ex parte reexamination proceedings.
- §1.956 - for patent owner requests for extension of time in inter partes reexamination proceedings.
- § 5.12 - for expedited handling of a foreign filing license.
- § 5.15 - for changing the scope of a license.
- § 5.25 - for retroactive license.

Petition Fees under 37 CFR 1.17(h): Fee \$130 Fee Code 1464

For petitions filed under:

- §1.19(g) - to request documents in a form other than that provided in this part.
- §1.84 - for accepting color drawings or photographs.
- §1.91 - for entry of a model or exhibit.
- §1.102(d) - to make an application special.
- §1.138(c) - to expressly abandon an application to avoid publication.
- §1.313 - to withdraw an application from issue.
- §1.314 - to defer issuance of a patent.

Name (Print/Type)	Colin D. Barnitz	Registration No. (Attorney/Agent)	35,061
Signature		Date	December 22, 2005

This collection of information is required by 37 CFR 1.114. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 10/802,853 **Confirmation No.** 5857
Applicant : KODAMA, S.
Filed : March 18, 2004
Title : DATA WRITE PROTECTION IN A STORAGE AREA
NETWORK AND NETWORK ATTACHED STORAGE
MIXED ENVIRONMENT
TC/AU : 2171
Examiner : TBD
Docket No. : 274.43202X00
Customer No.: 24956

PETITION TO MAKE SPECIAL
(ACCELERATED EXAMINATION UNDER 37 CFR §1.102(d))

MAIL STOP: PETITION
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

The Applicants petition the Commissioner to make the above-identified application special in accordance with 37 CFR §1.102(d). In support of this Petition, pursuant to MPEP § 708.02(VIII), Applicants state the following.

(A) REQUIRED FEE

This Petition is accompanied by the fee set forth in 37 CFR § 1.117(b).
Payment of the fee has been made in the manner set forth below in Section (G).

12/17/2005 10:00:00 AM 10802853 01 FC:1464 130.00 OP

(B) ALL CLAIMS ARE DIRECTED TO A SINGLE INVENTION

Following the Preliminary Amendment filed on the same date as this paper, claims 1-35 are pending in the application. All the pending claims of the application are directed to a single invention. If the Office determines that all claims in the application are not directed to a single invention, Applicant will make election without traverse as a prerequisite to the grant of special status in conformity with established telephone restriction practice.

As set forth in independent claims 1, 13, 25 and 33, the invention is generally directed to storage data protection. Under independent claim 1, the invention is a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising: a first interface for file level input/output (I/O); a second interface for block level I/O; a plurality of physical volumes upon which logical volumes are represented; a first controller which processes file level I/O requests; and a second controller which processes block level I/O requests, wherein said first and second controllers share protection information for said logical and physical volumes, and wherein archived data is stored from said first interface and protected at the file system level, is accessed from both said first and second interfaces and is protected whichever interface is being used.

Additionally, under independent claim 13, the invention is a system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising: a network attached storage (NAS)

gateway; and a storage system which is connected to said NAS gateway, wherein said NAS gateway comprises: a first interface for file level I/O, a third interface for block level I/O, and a first controller which processes file level I/O requests, wherein said storage system comprises: a second interface for block level I/O, said second interface being connected to said third interface, a plurality of physical volumes upon which logical volumes are represented, and a second controller which processes block level I/O requests, wherein said first and second controllers share protection information for said logical and physical volumes, and wherein archived data is stored from said first interface of said NAS gateway to said second interface via said third interface and protected at the file system level, is accessed from both said first and second interfaces and is protected whichever interface is being used.

Further, under independent claim 25, the invention is a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level comprising: a first interface for file level input/output (I/O); a second interface for block level I/O; a plurality of physical volumes upon which logical volumes are represented; a first controller which processes file level I/O requests; and a second controller which processes block level I/O requests, wherein said first controller changes protection information for said logical and physical volumes to protect data, wherein the volume storing the protected data is protected from access from said second controller in accordance with the protection information.

In addition, under independent claim 33, the invention is a storage system for handling input/output (I/O) requests from a plurality of servers, wherein a first server of the servers sends file I/O requests and a second server of the servers sends block I/O requests, comprising: a storage media including a plurality of volumes, at least one of the volumes stores data of file system; a first controller, to be coupled to the first server, conducting I/O operations in response to the file I/O requests; a second controller, coupled to the storage media, to be coupled to the second server, conducting I/O operations in response to the block I/O requests; and wherein at least one volume of the volumes which stores the data of file system is set to be write-protected from the second controller when the first controller receives a request from the first server to protect the file system in the storage media.

(C) PRE-EXAMINATION SEARCH

A pre-examination search has been conducted, directed to the invention as claimed. The pre-examination search was conducted in the following US Manual of Classification areas:

<u>Class</u>	<u>Subclass</u>
360	60
707	9, 10, 200
709	213, 218, 220, 249
710	2-5, 33, 65, 72, 74
711	100, 112, 114, 148, 150-154, 161, 162, 165, 170

Furthermore, a keyword search was conducted on the USPTO's full-text EAST database.

(D) REFERENCES DEEMED MOST-CLOSELY RELATED TO THE SUBJECT MATTER ENCOMPASSED BY THE CLAIMS

Based upon a review of the documents located by the search and the documents already of record in the application, the references deemed to be most-closely related to the subject matter encompassed by the claims are listed below.

<u>Document No.</u>	<u>Inventor</u>
US 5894485	Halligan et al.
US 6115797	Kanda et al.
US 6145006	Vishlitsky et al.
US 20020152339	Yamamoto
US 20030105767	Sonoda et al.,

All of the above-listed references (as well as any other references uncovered during the search) have been made of record in the present application by an Information Disclosure Statement filed on the same date as this paper. Accordingly, in accordance with MPEP § 708.02(VIII)(D), additional copies of these documents have not been submitted with this Petition.

(E) DETAILED DISCUSSION OF THE REFERENCES

Following a brief discussion of features of the invention in Section (E)(1) below, the references deemed most-closely related are discussed in Section (E)(2) below, pointing out, with the particularity required by 37 CFR 1.111 (b) and (c), how the claimed subject matter is patentable over the teachings of these documents.

(1) It is Submitted that the Present Invention is Patentable Over the References for the Following Reasons

It is submitted that the cited references, whether taken individually or in combination with each other, fail to teach or suggest the invention as claimed. In particular, the cited references fail to teach or suggest the features of the invention set forth for each claim, as follows:

a first feature of the present invention as recited in independent claims 1 and 13, comprising a storage system for protecting data on a physical volume at the file system level and permitting access to the data at the physical volume level including a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes;

a second feature of the present invention, as recited in independent claim 25, comprising a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first controller changes protection information for logical and physical volumes to protect data, wherein a volume storing protected data is protected from access from the second controller in accordance with the protection information; and

a third feature of the present invention, as recited in independent claim 33, comprising a first controller conducting I/O operations in response to file I/O requests, a second controller conducting I/O operations in response to block I/O requests, wherein at least one volume of the volumes which stores the data of file system is set to be write-protected from the second controller when the first controller

receives a request from the first server to protect the file system in the storage media.

(2) Discussion of the References Deemed to be Most-Closely Related

The patent to Halligan et al., US 5894485, discloses disk array write protection at the sub-unit level. A computer system 10 has a plurality of host computers 12 and a mass storage system 13 has a plurality of disk drive elements 14. Interconnecting the host computers 12 and the disk drive elements 14 is a disk drive controller 16 that receives memory commands from the various host computers and delivers the data associated with those commands to the appropriate disk drive elements 14. Each of the disk drive elements 14 is logically divided into a plurality of logical volumes. One host computer can command, through the disk drive controller 16, that a particular logical volume to which it has read and write privileges can be write protected against all other host computers, at, for example, the channel director level. (See, e.g., Abstract and column 2, line 59, through column 3, line 26.)

However, Halligan et al. do not teach or suggest the features of the present invention, such as a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes.

More particularly, Halligan et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claims 1 and 13, the above-described second feature of the present invention, as recited in independent

claim 25, or the above-described third feature of the present invention, as recited in independent claim 33.

The patent to Kanda et al., US 6115797, discloses sharing storage devices via different interfaces, and includes an SCSI interface unit 61 and a channel interface unit 71 in a disk controller 80. A CKD disk interface unit 85 is hardware for conducting data transfer between disk devices 100 and 101 and the bus 86. Disk devices 100 and 101 are disk devices connected to the CKD disk interface unit 85 of the disk controller 80. The disk device 100 stores CKD records 110. The disk device 100 is a disk device shared by the CPUs 10 and 11. The disk device 101 stores CKD records 111. A tape library 150 is connected to the CPU 11 via the channel cable 75. Via the operating system 40 on CPU 10, the SCSI interface unit 60, the SCSI interface unit 61, the control program 83, and the CKD disk interface unit 85, the application program 20 writes a CKD record 110 onto the disk device 100. At this time, a control program 83 converts a record of FBA format sent from the CPU 10 to a record of CKD format, and then writes the record of CKD format into the disk device 100. When the application program 20 reads a CKD record 110 existing on the disk device 100 via the same mechanism units, the control program 83 extracts only specified data out of the CKD record read from the disk device 100 and sends the specified data to the CPU 10. (See, e.g., Abstract and column 3, line 34, through column 4, line 40.)

However, Kanda et al. do not teach or suggest the features of the present invention, such as a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes.

More particularly, Kanda et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claims 1 and 13, the above-described second feature of the present invention, as recited in independent claim 25, or the above-described third feature of the present invention, as recited in independent claim 33.

The patent to Vishlitsky et al., US 6145006, discloses a method of managing shared storage system resources amongst a plurality of heterogeneous host computers utilizing different operating systems. The method includes providing a lock mechanism which allows a host to gain exclusive control of storage system resources, including storage devices. The locking mechanism is provided within a storage system 14 which allows an attached host to lock particular storage system resources or the entire storage system. The lock mechanism is recognized and useable by heterogeneous hosts attached to the storage system. That is, the lock mechanism of the present invention is visible to and settable by both mainframe and open systems computers simultaneously attached to storage system 14. The locks are maintained as an external locks data structure 27 in a global memory 24 of storage system 14. By implementing a specialized set of storage system

commands, each host, via its associated host controller, may access the global memory 24 to read and/or set the storage system locks. (See, e.g., Abstract and column 4, line 49, through column 5, line 2.)

However, Vishlitsky et al. do not teach or suggest the features of the present invention, such as a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes.

More particularly, Vishlitsky et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claims 1 and 13, the above-described second feature of the present invention, as recited in independent claim 25, or the above-described third feature of the present invention, as recited in independent claim 33.

The published patent application of Yamamoto, US 20020152339, discloses a storage system that includes a storage controller and storage media for reading data from or writing data to the storage media in response to SCSI, NFS, CIFS, or HTTP type read/write requests. A controller element operates to connect processor units of the host processing system to a plurality of physical disk units. The controller unit uses logical volume management, allowing the different block and file system I/O requests to access portions of the physical disk units allocated for block system data or file system data. File system I/O requests may be accompanied by lock/unlock requests. A lock request seeks access to a specific data block within a specific file,

or the file itself. An unlock request releases access to the block/file previously obtained. A lock or unlock request will include either the file name of the file sought to be accessed, or a block number in the specified file, and a block length.

Additionally, in order to provide at least a modicum of protection against inadvertent or other access of file system data from a block system interface or adapter, a logical volume table information could include information respecting whether or not the particular logical volume is accessible to certain types of access. For example, a file system logical volume would include information that it was or was not accessible from a block system access. (See, e.g., Abstract and paragraphs 35, 36, 39, and 47.)

However, Yamamoto does not teach or suggest the features of the present invention, such as a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes.

More particularly, Yamamoto does not teach or suggest the above-described first feature of the present invention, as recited in independent claims 1 and 13, the above-described second feature of the present invention, as recited in independent claim 25, or the above-described third feature of the present invention, as recited in independent claim 33.

The published patent application of Sonoda et al., US 20030105767, discloses a system that provides both interfaces of SAN and NAS type. A storage

system includes multiple interfaces for external connection, multiple disks accessed from multiple interfaces, and a shared memory accessed from multiple interfaces. The multiple interfaces are block interfaces executing disk block I/O request, and file interfaces of file servers executing file I/O request. Under the configuration of Sonoda et al., it is possible to provide a SAN/NAS integrated storage system which is capable of providing both a SAN interface and a NAS interface at an arbitrary ratio, of obtaining the high reliability with which no data is lost even in occurrence of a fault, and of making it possible that an arbitrary number of NAS interfaces access the same file system with high performance. (See, e.g., Abstract and paragraph 71.)

However, Sonoda et al. do not teach or suggest the features of the present invention, such as a first controller which processes file level I/O requests, and a second controller which processes block level I/O requests, wherein the first and second controllers share protection information for logical and physical volumes.

More particularly, Sonoda et al. do not teach or suggest the above-described first feature of the present invention, as recited in independent claims 1 and 13, the above-described second feature of the present invention, as recited in independent claim 25, or the above-described third feature of the present invention, as recited in independent claim 33.

(F) Conclusion

Therefore, since the cited references fail to teach or suggest the above-described first feature of the present invention, as recited in independent claims 1

and 13, the above-described second feature of the present invention, as recited in independent claim 25, or the above-described third feature of the present invention, as recited in independent claim 33, it is submitted that all of the claims are patentable over the cited references, whether the references are taken individually or in combination with each other.

Applicants have conducted what they believe to be a reasonable search, but make no representation that "better" or more relevant prior art does not exist. The United States Patent and Trademark Office is urged to conduct its own complete search of the prior art, and to thoroughly examine this application in view of the prior art cited herein and any other prior art that the United States Patent and Trademark Office may locate in its own independent search. Further, while Applicants have identified in good faith certain portions of each of the references listed herein in order to provide the requisite detailed discussion of how the claimed subject matter is patentable over the references, the United States Patent and Trademark Office should not limit its review to the identified portions but rather, is urged to review and consider the entirety of each reference, and not to rely solely on the identified portions when examining this application.

In view of the foregoing, Applicants request that this Petition to Make Special be granted and that the application undergo the accelerated examination procedure set forth in MPEP 708.02 VIII.

(G) FEE PAYMENT (37 C.F.R. 1.17(h))


The fee required by 37 C.F.R. § 1.17(h) is to be paid by:

☒ the Credit Card Payment Form (attached) for \$130.00.

☐ charging Account 50-1417 the sum of \$130.00.

Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, or credit any overpayment of fees, to the deposit account of MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C., Deposit Account No. 50-1417. A duplicate of this petition is attached.

Respectfully submitted,


Colin D. Barnitz
Registration No. 35,061

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Date: December 22, 2005